DOCUMENT RESUME

ED 260 602 HE 018 550

AUTHOR Quick, Miriam M.; And Others
TITLE A Preliminary Examination of the Impact of Selected Educational Variables on the SBTPE and NCLEX.
PUB DATE 85
NOTE 15p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Bachelors Degrees; *Certification; *College Graduates; Comparative Testing; Higher Education; National Competency Tests; *Nurses; *Nursing Education; Predictor Variables; *Scores; State Standards; Testing Programs
IDENTIFIERS East Carolina University NC; *National Council Licensure Examination; *Professional Licensing Examinations; State Board Test Pool Examination

ABSTRACT

The performance of baccalaureate nursing school graduates on the new National Council Licensure Examination (NCLEX) was compared to graduates' performance on the old examination, the State Board Test Pool Examination (SBTPE). Data were gathered for 287 graduates who took the SBTPE between 1979-1981 and 175 graduates who took the NCLEX in 1982 and 1983. The passing rate of East Carolina University graduates on the NCLEX increased by almost 12 percent during 1982 and 1983. Graduates had a higher passing rate on the NCLEX compared to the SBTPE. For both licensing examinations, transfer and older graduates had higher passing rates than nontransfer and younger graduates. Compared to graduates who failed either licensing examination, graduates who passed the examinations had: higher mean raw scores on six National League for Nursing Achievement Tests, higher mean scores on the verbal and math Scholastic Aptitude Tests, and higher mean grade point averages and grade averages in selected study fields (mathematics-science, social science, nursing theory, and clinical nursing). (SW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED260602

A Preliminary Examination of the Impact of Selected Educational Variables on the SBTPE and NCLEX

Miriam M. Quick, R.N., M.P.H.
Karen C. Krupa, R.N., M.P.H.
Theodore W. Whitley, Ph.D.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Miriam M. Quick

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

HE018 550

© Quick, Krupa, and Whitley 1985

The change from the State Board Test Pool Examination (SBTPE) to the National Council Licensure Examination (NCLEX) in July 1982 precipitated concern for graduate performance on the new examination. The present study is a result of this concern, and was initiated to compare performance of graduates on the SBTPE with performance on the NCLEX. This report is restricted to graduates of one baccalaureate program in nursing, and contains preliminary findings of graduates' performance on the SBTPE and NCLEX. Predicting performance on the NCLEX is the long range goal of the study.

ESTABLISHING A DATA BASE

The computerized data base compiled for this study contains information for 462 baccalaureate nursing graduates who took one of the licensing examinations between 1979 and 1983. Specifically, data were gathered for 287 graduates who took the SBTPE between 1979-1981. The SBTPE consisted of five separate sections, each of which the graduate had to pass with a score of 350 or greater in order to be licensed. In this study, if the graduate failed one or more sections, the overall examination outcome was recorded as a "fail". Data were also compiled for 175 graduates who took the NCLEX in 1982 and 1983. The NCLEX consisted of one comprehensive/integrated test on which the graduate had to score 1600 or greater in order to pass the examination and be licensed. If the graduate scored less than 1600, the examination outcome was recorded as a "fail".

Variables examined in this study included those which have been shown to be of predictive value on the SBTPE in other baccalaureate programs (1-7). A data base was developed so that variables such as transfer or non-transfer status, age, Scholastic Aptitude Test (SAT) scores, National League for Nursing (NLN) Achievement Test scores, selected grade point averages (GPA's),

and selected grade averages of required cognate and nursing courses were readily retrievable. SBTPE and NCLEX scores were obtained for all students who had their scores forwarded to the school.

FINDINGS AND DISCUSSION

The findings of this study will be presented for each examination group based upon whether they passed or failed their respective licensure examination.

Licensure Examination Performance

The passing rate of East Carolina University graduates increased by almost 12% when the NCLEX was administered in 1982 and 1983. As Table 1 shows, the percentage of those who passed the SBTPE was 80.1% while the percentage of those passing the NCLEX was 92%.

TABLE 1. PASS-FAIL RATES FOR GRADUATES TAKING SBTPE AND NCLEX FOR THE YEARS 1979-1983.

Performance	SBTPE	NCLEX
	n=287	n=175
Pass	80.1% (n=230)	92.0% (n=161)
Fail	19.9% (n=57)	8.0% (n=14)

A question that may be asked is: why did the passing rate of graduates who took the NCLEX increase? One explanation might be that the NCLEX more accurately tests the knowledge gained by students in a baccalaureate nursing program.

Transfer and Non-Transfer Status

As one might expect, the passing rate of the transfer and non-transfer students increased with the administration of the NCLEX. Transfer students had a higher passing rate than non-transfer students on both licensing examinations (see Table 2).

TABLE 2. A COMPARISON OF TRANSFER AND NON-TRANSFER STUDENTS WITH SBTPE AND NCLEX RESULTS.

Lincense Examination Group	Transfer	Non-Transfer
SBTPE	n=71	n=216
Pass	84.5% (n=60)	78.7% (n=170)
Fail	15.5% (n=11)	21.3% (n=46)
NCLEX	n=52	n=123
Pass	96.2% (n=50)	90.2% (n=111)
Fail	3.8% (n=2)	9.8% (n=12)

Why do transfer students have higher passing rates? Possible answers we want to explore are the age at entry and the previous educational backgrounds of transfer students.

Age

Data on each student included his/her age upon enrollment in the University. The mean age at entry of students who passed either licensing examination was greater than the mean age at entry of students who failed either licensing examination (Table 3).

TABLE 3. COMPARISON BY AGE

Age at Entry in Years	SBTPE Group		NCLEX Group	
	Pass n=230	Fail n=57	Pass n=161	Fail n = 14
Mean	19.1	18.3	19.2	18.4
Range	17-42	17-20	17-35	18-21

The range of ages at entry of students who failed either license exams was 17-21 years. All students who were twenty-two years of age or older at entry passed the licensing examination that they took. This may support the previous findings that transfer students had higher passing rates.

SAT Scores

In both licensing examination groups, the mean scores on both the SAT Verbal and Math tests were higher for those who passed than for those who failed (Table 4). The difference in the mean SAT Verbal score between those who passed and those who failed the SBTPE was 52 points whereas the difference in the NCLEX group was 85 points. The difference in the mean SAT Math score between those who passed and those who failed both examinations was smaller and similar.

TABLE 4. COMPARISON OF SAT SCORES WITH SBTPE AND NCLEX RESULTS.

	SBTPE Group		NCLEX Group	
SAT Scores	Pass n=173*	Fail n=46*	Pass n=115*	Fail n=13*
SAT Verbal				
Mean	447	395	439	354
S.D.	70	69	69	73
Range	270-630	270-570	280-620	260-530
SAT Math				
Mean	462	442	458	432
S.D.	79	60	71	50
Range	300-700	330-550	320-660	370-520
SAT Total				
Mean	909	837	896	785
S.D.	127	106	122	105
Range	620-1220	620-1050	600-1210	670-1050

*SAT scores were not available on all graduates in this study; therefore "n's" in this table are less than total "n's" in each examination group.

Futher studies regarding NCLEX performance and SAT scores are needed since data are available on only thirteen graduates who have failed the NCLEX.

NLN Achievement Test Scores

NLN Achievement Test scores were not available on all graduates in this study. The following table contains data only on those graduates for whom both NLN test scores and licensing examination scores were available.

TABLE 5. COMPARISON OF NLN ACHIEVEMENT TEST RESULTS WITH SBTPE AND NCLEX RESULTS.

NLN ACHIEVEMENT TEST	SBTPE Group		NCLEX Group	
	Pass	Fail	Pass	Fail
Anatomy & Physiology	(n=144)	(n=37)	(n=157)	(n=14)
Mean	36.0	26.5	29.3	16.6
Range	2-79	6-61	0-79	4-54
S.D.	14.0	13.1	15.1	11.8
Nursing Care Part III	(n=206)	(n=46)	(n=159)	(n=12)
Mean	61.0	49.2	61.3	40.8
Range	25-91	7-79	24-93	31-53
S.D.	11.0	13.1	12.2	7.0
Obstetrical Nursing	(n=229)	(n=57)	(n=92)	(n=5)
Mean	64.3	56.0	54.2	38.2
Range	10-99	13-98	14-87	24-56
S.D.	12.8	14.3	18.8	11.8
Nursing of Children	(n=230)	(n=57)	(n=80)	(n=5)
Mean	76.1	67.9	70.0	61.2
Range	5-99	24-96	20-99	51-77
S.D.	12.5	12.3	16.1	12.3
Psychiatric Nursing	(n=228)	(n=57)	(n=159)	(n=14)
Mean	73.1	63.2	60.1	47.1
Range	18-99	14-96	32-78	30-62
S.D.	15.2	14.3	8.4	8.2
Community Nursing	(n=185)	(n=43)	(n=158)	(n=14)
Mean	79.8	68.1	58.1	46.4
Range	14-99	8-99	4-94	6-76
S.D.	12.1	19.6	13.7	16.0

(NLN - cont'd)

In each of the NLN Achievement Tests studied, the mean raw score of graduates who passed either the SBTPE or NCLEX was higher than the mean raw score of those who failed. The difference in the mean raw scores of those who passed and those who failed the NCLEX was greater than the difference in the SBTPE group in five of the six tests studied. In the Community Nursing Achievement Test, the difference was the same. It will be interesting to see if this trend continues.

Grade Point Averages

Grade point averages after the first, second, fourth, sixth, and eighth semesters were selected for study. Table 6 shows that the mean GPA was higher for all semesters in both examination groups who passed.

TABLE 6: COMPARISON OF SELECTED GPA's WITH SBTPE AND NCLEX RESULTS

Grade Point Averages		SBTPE Group		NCLEX Group	
		Pass	Fail	Pass	Fail
GPA_1		(n=56)	(n=9)	(n=126)	(n=12)
	Mean	3.06	2.70	2.91	2.70
	Range	2.11-4.0	2.14-3.38	1.96-4.00	1.93-3.19
	S.D.	.56	.49	.51	.38
GPA_2		(n=193)	(n=49)	(n=138)	(n=12
	Mean	3.00	2.72	2.97	2.72
	Range	1.98-4.0	2.03-3.57	1.95-3.97	2.19-3.09
	S.D.	.50	.39	.47	.30
GPA_4		(n=228)	(n=57)	(n=160)	(n=14)
	Mean	3.02	2.73	3.06	2.75
	Range	1.90-4.0	2.10-3.94	2.24-3.96	2.36-3.10
	S.D.	.51	.40	.44	.23
GPA_6		(n=230)	(n=57)	(n=161)	(n=14)
	Mean	3.03	2.69	3.12	2.83
	Range	1.98-4.0	2.15-3.95	2.34-3.97	2.42-3.25
	S.D.	.49	.39	.42	.25
GPA_8		(n=230)	(n=57)	(n=161)	(n=14)
	Mean	3.06	2.73	3.16	2.87
	Range	2.13-3.98	2.20-3.37	2.35-3.98	2.51-3.19
	S.D.	.45	.37	.39	.22

Further investigation may reveal whether one particular GPA is more predictive of examination outcome than another.

Grade Averages for Selected Required Cognate and Nursing Courses

Grade averages were computed for several of the admission criteria required for entrance into clinical nursing courses. An admission mathematics-science grade average (ADMSCGA) was computed by combining student grades on mathematics plus chemistry, biochemistry, anatomy and

physiology and their respective labs. A social science grade average (SSGA) was computed by combining student grades in sociology, family relations, general psychology, developmental psychology, and psychology of adjustment. It must be noted that the above grade averages could only be computed if the student had an entry in each category. (Many of the above grade averages could not be computed due to the fact that East Carolina University was on the quarter system prior to the fall semester, 1978). Another important consideration was that the grade averages were calculated by using the first grade the student received in a particular course.

TABLE 7: ADMISSION CRITERIA FOR SOPHOMORE YEAR WITH SBTPE AND NCLEX RESULTS

Variables	SBTPE Group		NCLEX Group	
	Pass	Fail	Pass	Fail
ADMSCGA	(n=45)	(n=8)	(n=98)	(n=12)
Mean	3.00	2.63	2.86	2.80
Range	1.86-4.0	2.14-3.14	1.00-4.0	2.29-3.14
S.D.	.59	.39	.60	.27
SSGA	(n=161)	(n=45)	(n=111)	(n=11)
Mean	3.20	2.86	3.30	3.00
Range	2.00-4.0	1.80-3.60	2.40-4.0	2.20-3.40
S.D.	.54	.46	.44	.42

Table 7 shows that students who performed successfully on either the SBTPE or the NCLEX had higher mean grade averages in both of the admission criteria combinations than students who failed the respective examination.

In addition, several nursing grade averages (NURSGA's) were computed. Due to the separation of nursing courses into theory and clinical courses in January 1980, comparisons of nursing grade averages could only be determined on the NCLEX groups. $NURSGA_1$ is an average of nursing theory

grades which have a clinical corequisite. $NURSGA_2$ is an average of all clinical course grades. For all NURSGA's it must be noted that the averages were calculated by using the first grade the student received in a nursing course.

TABLE 8: SELECTED NURSING GRADE AVERAGES WITH NCLEX RESULTS

Nursing Grade Average		NCLEX Group Pass	Fail
$NURSGA_1$ (theory courses)		(n=151)	(n=14)
	Mean	3.06	2.52
	Range	1.71-4.0	2.00-3.00
	S.D.	.56	.30
$NURSGA_2$ (clinical courses)		(n=157)	(n-14)
	Mean	3.46	3.39
	Range	2.50-4.0	2.33-4.0
	S.D.	.32	.47

Table 8 shows that the students who passed the NCLEX had higher mean nursing grade averages than those who failed. The largest difference in the mean grade averages (.54) in those students who passed the NCLEX and those who failed the NCLEX was in $NURSGA_1$ - the theory courses. No student who failed the NCLEX had an 'A' in any theory course which had a clinical corequisite. The smallest difference in the mean grade averages (.07) between the NCLEX pass and the NCLEX fail groups was in the $NURSGA_2$ - the clinical courses.

Again further investigation may lead to the identification of both admission GPA's and nursing GPA's which are predictive of success on the NCLEX.

CONCLUSIONS AND RECOMMENDATIONS

Experience with the NCLEX is limited and therefore, we consider the results of this study preliminary but suggestive. Graduates from this program had a higher passing rate on the NCLEX when compared to passing rates on the SBTPE. Transfer and older graduates had higher passing rates on both examinations. The mean SAT verbal score of those who passed the NCLEX was substantially higher than the mean SAT verbal score of those who failed the NCLEX. As expected, graduates who passed either licensing examination had higher mean raw scores on the NLN achievement tests studied. However, our findings suggest that the NLN's may be a better predictor of examination outcome for graduates who take the NCLEX. Similarly, mean GPA's and mean selected grade averages were higher for those graduates who passed either licensing examination than for those who failed. More data will be required to substantiate these apparent trends.

At this time, our data base includes the only two classes who have taken the NCLEX. As the number of graduates taking the NCLEX increases, our findings will become more reliable. Analyses utilizing more powerful statistical techniques are necessary in order to predict performance on the NCLEX. We are currently conducting such studies in our school and plan to report our findings at a later date.

References

1. Bell, J.A. and Martindill, C.F. "A Cross-Validation Study for Predictors of Scores on State Board Examinations," Nursing Research, 25:54-57, January-February 1976.

2. Brandt, E.M. and others. "Predicting Success on State Board Examinations," Nursing Research, 15:68-69, Winter 1966.

3. Melcolm, N. and others. "The Prediction of State Board Test Pool Examinations Scores within an Integrated Curriculum," Journal of Nursing Education, 20:24-28, May 1981.

4. Muhlenkamp, Ann F. "Prediction of State Board Scores in a Baccalaureate Program," Nursing Outlook, 19:57, January 1971.

5. Perez, T. L. "Investigation of Academic Moderator Variables to Predict Success on State Board of Nursing Examinations in a Baccalaureate Nursing Program," Journal of Nursing Education, 16:16-22, October 1977.

6. Seither, F.F. "Prediction of Achievement in Baccaluareate Nursing Education," Journal of Nursing Education, 19:28-36, March 1980.

7. Tillinghast, B.S. and Norris, B. "Let's Examine...The Relation of Selected Admission Variables to Student Achievement," Nursing Outlook, 16:58, July 1968.

Summary

This article describes preliminary findings in a study of graduates' performance on the State Board Test Pool Examination (SBTPE) and National Council Licensure Examination (NCLEX) in one baccalaureate program in nursing. Variables examined include: transfer or non-transfer status, age, Scholastic Aptitude Test (SAT) scores, National League for Nursing (NLN) Achievement Test scores, selected grade point averages (GPA's) and selected grade averages of required cognate and nursing courses.